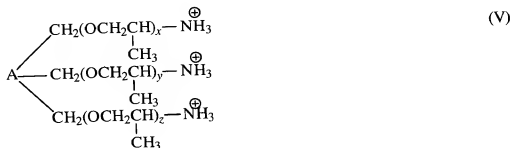
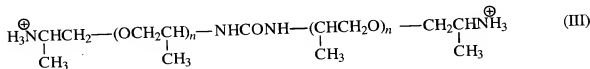
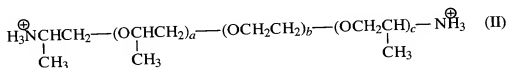
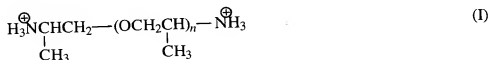


# What Is Claimed Is:

1. A water- and oil-repellent, antistatic composition comprising the blend of (a) at least one polymeric salt consisting of (i) at least one cation having at least one polyoxyalkylene moiety bonded to a cationic nitrogen center and (ii) at least one weakly coordinating anion, the conjugate acid of the anion having an acidity greater than or equal to that of a hydrocarbon sulfonic acid; and (b) at least one fluorochemical repellent; wherein said composition is blended with at least one insulating material.

2. The composition of claim 1, wherein said cation is represented by one of the following formulae:



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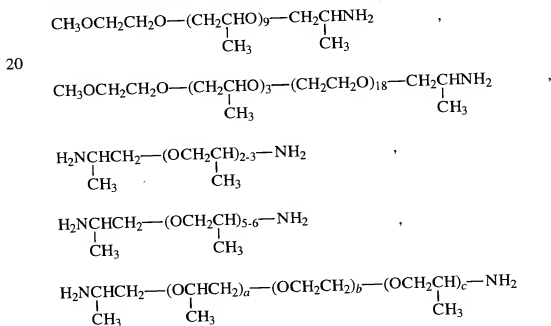


(VI)

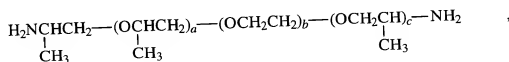
wherein, n is an integer of 3 to 50, b is an integer of 5 to 150, a and c, the same or different, each is an integer from 0 to 5, where a+c is an integer from

- 5 2 to 5, A is a  $\text{CH}\equiv$ ,  $\text{CH}_3\text{C}\equiv$ ,  $\text{CH}_3\text{CH}_2\text{C}\equiv$ , or a  $-\text{CH}_2-\text{CH}-\text{CH}_2-$  group, x, y and z, equal or different, are integers of 1 to 30 such that the sum of  $x + y + z \geq 5$ , POA is either a homopolymer or a copolymer that is random, blocked, or alternating, and POA comprises 2 to 50 units represented by the formula  $((\text{CH}_2)_m\text{CH}(\text{R}^3)\text{O})$  where each unit independently has m and  $\text{R}^3$ , where
- 10 m is an integer from 1 to 4,  
 $\text{R}^3$  is independently hydrogen or a lower alkyl group,  
 $\text{R}^1$  is independently an alkyl, an alicyclic, an aryl, an alkalicyclic, an arylalicyclic, or an alicyclicaryl group that optionally contains one or more heteroatoms,  
 $\text{R}^2$  is independently hydrogen, an alkyl, an alicyclic, an aryl, an alkalicyclic, an arylalicyclic, or an alicyclicaryl group that optionally contains one or more heteroatoms,  
 15 and d is an integer from 1 to 4.

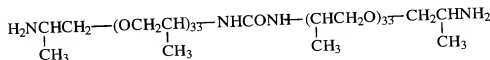
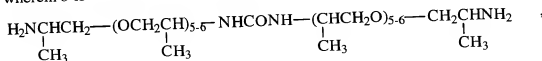
3. The composition of claim 1, wherein said cation is derived from amines selected from the group consisting of:



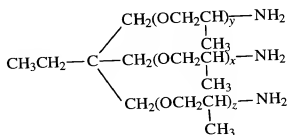
- 25 wherein b is ~8.5 and a + c is ~2.5,



wherein  $b$  is ~15.5 and  $a + c$  is ~2.5,

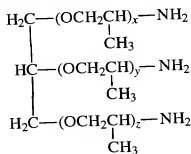


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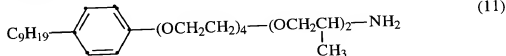


wherein  $x + y + z \sim 5-6$ ,

(10)



wherein  $x + y + z \sim 30$ , and

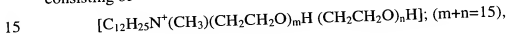


(11)

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where the number of repeat units for the polyoxyalkylene moieties is approximate.

4. The composition of claim 1, wherein said cation is selected from the group consisting of



15

$[C_6H_5CH_2N^+(CH_3)(CH_2CH_2O)_mH(CH_2CH_2O)_nH]; (m+n=15)$ , where  $C_6H_5CH_2 =$  benzyl,

$[C_{18}H_{37}N^+(CH_3)(CH_2CH_2O)_mH(CH_2CH_2O)_nH]; (m+n=15)$ ,

$[C_{18}H_{37}N^+(CH_3)(CH_2CH_2O)_mH(CH_2CHCH_3O)_nH]; (m+n=15)$ ,

5  $[C_{12}H_{25}N^+(CH_3)(CH_2CH_2O)_mH(CH_2CH_2O)_nH]; (m+n=5)$ ,

$[C_{12}H_{25}N^+(CH_3)_2(CH_2CHCH_3O)_mH]; (m=15)$ ,

$[C_{12}H_{25}N^+(CH_3)_2(CH_2CH_2CH_2CH_2O)_mH]; (m=15)$

$[C_{12}H_{25}N^+(CH_3)_2(CH_2CH_2O)_mH]; (m=15)$ ,

$[C_8H_{17}N^+(CH_3)_2(CH_2CH_2O)_mH]; (m=8)$ ,

10  $[C_{12}H_{25}N^+(CH_2CH_2O)_mH(CH_2CH_2O)_nH(CH_2CH_2O)_oH]; (m+n+o=15)$ , and

$[N^+(CH_2CH_2O)_mH(CH_2CH_2O)_nH(CH_2CH_2O)_oH(CH_2CH_2O)_pH]; (m+n+o+p=20)$ ;

wherein the number of repeat units for the polyoxyalkylene moieties is approximate.

5. The composition of claim 1, wherein said hydrocarbon sulfonic acid has  
15 from 1 to about 20 carbon atoms.

6. The composition of claim 1, wherein the Hammett acidity function,  $H_0$ , of  
said conjugate acid is less than about -7.

7. The composition of claim 1, wherein said Hammett acidity function,  $H_0$ , of  
20 said conjugate acid is less than about -10.

8. The composition of claim 1, wherein said anion is selected from the group  
consisting of organic anions and fluoroorganic anions.

25 9. The composition of claim 8, wherein said organic anions are selected from  
the group consisting of alkyl sulfonates, aryl sulfonates, and alkaryl sulfonates.

10. The composition of claim 8, wherein said fluoroorganic anions are  
30 perfluorinated.

11. The composition of claim 8, wherein said fluoroorganic anions are selected from the group consisting of



5 (A)



10 (B)



15 (C)

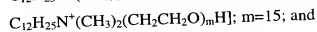
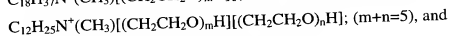
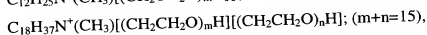
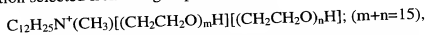
wherein:

- each  $R_1$  is independently a fluorinated alkyl or aryl group that is cyclic or acyclic, saturated or unsaturated, and may optionally contain catenated or terminal heteroatoms selected from the group consisting of N, O, and S,
- Q is independently an  $\text{SO}_2$  or a CO linking group, and
- X is selected from the group consisting of  $\text{QR}_1$ , CN, halogen, H, alkyl, aryl, Q-alkyl, and Q-aryl.

12. The composition of claim 8, wherein said fluoroorganic anions are selected from the group consisting of perfluoroalkanesulfonates, cyanoperfluoroalkanesulfonylamides, bis(cyano)perfluoroalkanesulfonylmethides, cyano-bis-(perfluoroalkanesulfonyl)methides, bis(perfluoroalkanesulfonyl)imides, bis(perfluoroalkanesulfonyl)methides, tris(perfluoroalkanesulfonyl)methides, and mixtures thereof.

13. The composition of claim 1, wherein said polymeric salt is thermally stable at about 240°C.

14. The composition of claim 1, wherein said polymeric salt consists of at least one cation selected from the group consisting of



at least one weakly coordinating anion.

15. The composition of claim 1, wherein said fluorochemical repellent comprises at least one fluorochemical group that contains a perfluorinated carbon chain having from 3 to about 20 carbon atoms.

16. The composition of claim 15, wherein said fluorochemical group is a perfluoroaliphatic group.

17. The composition of claim 1, wherein said fluorochemical repellent comprises at least one fluorochemical selected from the group consisting of fluorochemical urethanes, ureas and substituted ureas, esters, ethers, alcohols, epoxides, allophanates, amides, amines (and salts thereof), acids (and salts thereof), carbodiimides, guanidines, oxazolidinones, isocyanurates, piperazines, aminoalcohols, sulfones, imides, biurets, acrylate and methacrylate homopolymers and copolymers, siloxanes, alkoxysilanes, chlorosilanes, and mixtures thereof.

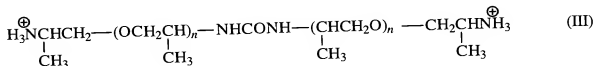
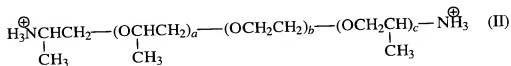
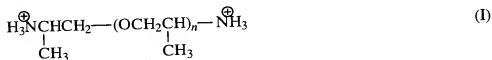
18. The composition of claim 1, wherein said fluorochemical repellent comprises at least one fluorochemical selected from the group consisting of fluorochemical oxazolidinones, fluorochemical esters, fluorochemical amides, and mixtures thereof.

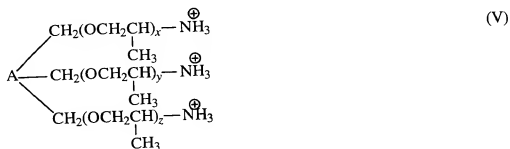
19. The composition of claim 1, wherein said composition is melt blended with at least one insulation material.

20. A water- and oil-repellent, antistatic composition comprising (a) at least one polymeric salt consisting of (i) at least one cation having at least one polyoxyalkylene moiety bonded to a cationic nitrogen center, (ii) at least one weakly coordinating fluoroorganic anion; and (b) at least one fluorochemical repellent.

21. The composition of claim 20, wherein said composition is topically applied to an insulating material.

22. The composition of claim 20, wherein said cation is represented by one of the following formulae:





wherein:

5 n is an integer of 3 to 50, b is an integer of 5 to 150, a and c, the same or different, each is an integer from 0 to 5, where a+c is an integer from

2 to 5, A is a  $\text{CH}=\text{CH}_2$ ,  $\text{C}\equiv\text{C}$ ,  $\text{CH}_3\text{CH}_2\text{C}\equiv$ , or a  $-\text{CH}_2-\text{CH}(\text{CH}_3)-$  group, x, y and z, equal or different, are integers of 1 to 30 such that the sum of x + y + z  $\geq$  5, POA is either  
 10 a homopolymer or a copolymer that is random, blocked, or alternating, and comprises 2 to 50 units represented by the formula  $((\text{CH}_2)_m\text{CH}(\text{R}^3)\text{O})$  where each unit independently has m and  $\text{R}^3$ , wherein:

m is an integer from 1 to 4,

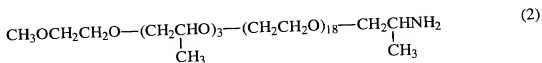
$\text{R}^3$  is independently hydrogen or a lower alkyl group,

15  $\text{R}^1$  is independently an alkyl, an alicyclic, an aryl, an alkalicyclic, an arylalicyclic, or an alicyclicaryl group that optionally contains one or more heteroatoms,

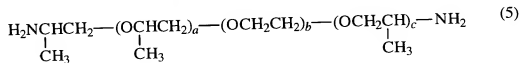
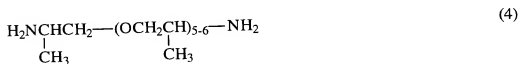
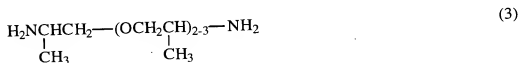
$\text{R}^2$  is independently hydrogen, an alkyl, an alicyclic, an aryl, an alkalicyclic, an arylalicyclic, or an alicyclicaryl group that optionally contains one or more heteroatoms, and d is an integer from 1 to 4.

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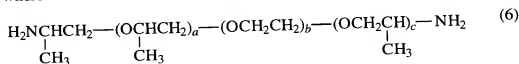
23. The composition of claim 20, wherein said cation is derived from amines selected from the group consisting of





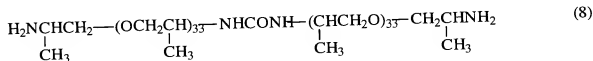
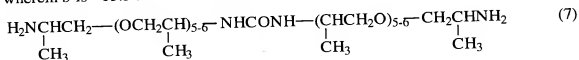


wherein  $b$  is  $\sim 8.5$  and  $a + c$  is  $\sim 2.5$ ,

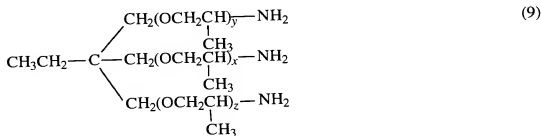


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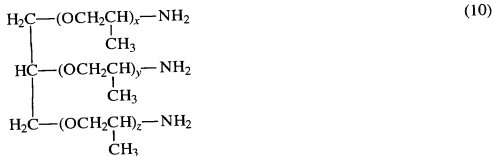
wherein  $b$  is  $\sim 15.5$  and  $a + c$  is  $\sim 2.5$ ,



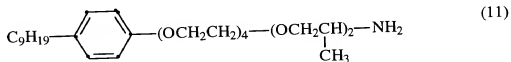
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wherein  $x + y + z \sim 5-6$ ,



wherein  $x + y + z \sim 30$ ,



wherein the number of repeat units for the polyoxyalkylene moieties is approximate.

24. The composition of claim 20, wherein said cation is selected from the  
5 group consisting of

10  $[\text{C}_{12}\text{H}_{25}\text{N}^+(\text{CH}_3)(\text{CH}_2\text{CH}_2\text{O})_m\text{H}(\text{CH}_2\text{CH}_2\text{O})_n\text{H}]; (m+n=15),$   
 $[\text{C}_6\text{H}_5\text{CH}_2\text{N}^+(\text{CH}_3)(\text{CH}_2\text{CH}_2\text{O})_m\text{H}(\text{CH}_2\text{CH}_2\text{O})_n\text{H}]; (m+n=15),$  where  $\text{C}_6\text{H}_5\text{CH}_2 =$   
 benzyl,  
 $[\text{C}_{18}\text{H}_{37}\text{N}^+(\text{CH}_3)(\text{CH}_2\text{CH}_2\text{O})_m\text{H}(\text{CH}_2\text{CH}_2\text{O})_n\text{H}]; (m+n=15),$   
 $[\text{C}_{18}\text{H}_{37}\text{N}^+(\text{CH}_3)(\text{CH}_2\text{CH}_2\text{O})_m\text{H}(\text{CH}_2\text{CH}(\text{CH}_3)\text{O})_n\text{H}]; (m+n=15),$   
 $[\text{C}_{12}\text{H}_{25}\text{N}^+(\text{CH}_3)(\text{CH}_2\text{CH}_2\text{O})_m\text{H}(\text{CH}_2\text{CH}_2\text{O})_n\text{H}]; (m+n=5),$   
 $[\text{C}_{12}\text{H}_{25}\text{N}^+(\text{CH}_3)_2(\text{CH}_2\text{CH}(\text{CH}_3)\text{O})_m\text{H}]; (m=15),$   
 $[\text{C}_{12}\text{H}_{25}\text{N}^+(\text{CH}_3)_2(\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{O})_m\text{H}]; (m=15),$   
 15  $[\text{C}_{12}\text{H}_{25}\text{N}^+(\text{CH}_3)_2(\text{CH}_2\text{CH}_2\text{O})_m\text{H}]; (m=15),$   
 $[\text{C}_8\text{H}_{17}\text{N}^+(\text{CH}_3)_2(\text{CH}_2\text{CH}_2\text{O})_m\text{H}]; (m=8),$   
 $[\text{C}_{12}\text{H}_{25}\text{N}^+(\text{CH}_2\text{CH}_2\text{O})_m\text{H}(\text{CH}_2\text{CH}_2\text{O})_n\text{H}(\text{CH}_2\text{CH}_2\text{O})_o\text{H}]; (m+n+o=15),$  and  
 $[\text{N}^+(\text{CH}_2\text{CH}_2\text{O})_m\text{H}(\text{CH}_2\text{CH}_2\text{O})_n\text{H}(\text{CH}_2\text{CH}_2\text{O})_o\text{H}(\text{CH}_2\text{CH}_2\text{O})_p\text{H}]; (m+n+o+p=20);$   
 wherein the number of repeat units for the polyoxyalkylene moieties is approximate.

20

25. The composition of claim 20, wherein said weakly coordinating  
fluoroorganic anion is perfluorinated.

26. The composition of claim 20, wherein said weakly coordinating  
25 fluoroorganic anion is selected from the group consisting of



(A)

5



(B)

10



(C)

15

wherein:

each  $R_f$  is independently a fluorinated alkyl or aryl group that is cyclic or acyclic, saturated or unsaturated, and may optionally contain catenated or terminal heteroatoms selected from the group consisting of N, O, and S,

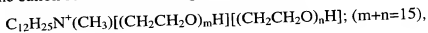
Q is independently an  $SO_2$  or a CO linking group, and

20 X is selected from the group consisting of  $QR_f$ , CN, halogen, H, alkyl, aryl, Q-alkyl, and Q-aryl.

27. The composition of claim 20, wherein said fluoroorganic anion is selected from the group consisting of perfluoroalkanesulfonates,  
25 cyanoperfluoroalkanesulfonylamides, bis(cyano)perfluoroalkanesulfonylmethides, cyano-bis-(perfluoroalkanesulfonyl)imides, bis(perfluoroalkanesulfonyl)imides, bis(perfluoroalkanesulfonyl)methides, tris(perfluoroalkanesulfonyl)methides, and mixtures thereof.

30

28. The composition of claim 20, wherein said polymeric salt consists of at least one cation selected from the group consisting of



$C_{18}H_{37}N^+(CH_3)[(CH_2CH_2O)_mH][(CH_2CH_2O)_nH]; (m+n=15),$

$C_{12}H_{25}N^+(CH_3)[(CH_2CH_2O)_mH][(CH_2CH_2O)_nH]; (m+n=5),$  and

$C_{12}H_{25}N^+(CH_3)_2(CH_2CH_2O)_mH; m=15;$

and at least one weakly coordinating fluoroorganic anion.

5

29. The composition of claim 20, wherein said fluorochemical repellent comprises at least one fluorochemical group that contains a perfluorinated carbon chain having from 3 to about 20 carbon atoms.

10

30. The composition of claim 29, wherein said fluorochemical group is a perfluoroaliphatic group.

15

31. The composition of claim 20, wherein said fluorochemical repellent comprises at least one fluorochemical selected from the group consisting of fluorochemical urethanes, ureas and substituted ureas, esters, ethers, alcohols, epoxides, allophanates, amides, amines (and salts thereof), carbodiimides, guanidines, oxazolidinones, isocyanurates, piperazines, aminoalcohols, sulfones, imides, biurets, acrylate and methacrylate homopolymers and copolymers, siloxanes, alkoxysilanes, chlorosilanes, and mixtures thereof.

20

32. The composition of claim 31, wherein said fluorochemical repellent comprises at least one fluorochemical selected from the group consisting of fluorochemical oxazolidinones, fluorochemical esters, fluorochemical amides, and mixtures thereof.

25

33. The composition of claim 21, wherein said insulating material is selected from the group consisting of thermoplastic polymers and thermoset polymers.

30

34. The composition of claim 33, wherein said insulating material is a thermoplastic polymer.

35. A water- and oil-repellent, antistatic composition comprising (a) at least one polymeric salt consisting of (i) at least one cation having at least one polyoxyalkylene moiety bonded to a cationic nitrogen center, and (ii) at least one weakly coordinating anion, the conjugate acid of said anion having an acidity greater than or equal to that of methane sulfonic acid or p-toluene sulfonic acid; (b) at least one fluorochemical repellent; and (c) at least one thermoplastic polymer; wherein said composition is prepared by forming a blend of components (a), (b), and (c).
36. The composition of claim 35, wherein said blend is a melt blend.
37. A fiber comprising the composition of claim 1.
38. A fabric comprising the fiber of claim 1.
39. A film comprising the composition of claim 1.
40. A molded or blown article comprising the composition claim 1.
41. A coating comprising the composition of claim 1.
42. A process for preparing a water- and oil-repellent, antistatic composition comprising the steps of (a) combining (i) at least one polymeric salt consisting of at least one cation having at least one polyoxyalkylene moiety bonded to a cationic nitrogen center and at least one anion, said anion being a weakly coordinating anion, the conjugate acid of said anion having an acidity greater than or equal to that of a hydrocarbon sulfonic acid, (ii) at least one fluorochemical repellent, and (iii) at least one thermoplastic polymer; and (b) melt processing the resulting combination.
43. The process of claim 42, wherein either said polymeric salt or said fluorochemical repellent is combined with said thermoplastic polymer, and the other is topically applied to the surface of the resulting melt-processed combination.

44. A process for preparing a water- and oil-repellent, antistatic composition comprising the steps of (a) combining (i) at least one polymeric salt consisting of at least one cation having at least one polyoxyalkylene moiety bonded to a cationic nitrogen center and an anion, and at least one anion, said anion being a weakly coordinating anion, the conjugate acid of said anion having an acidity greater than or equal to that of a hydrocarbon sulfonic acid, (ii) at least one fluorochemical repellent, and (iii) at least one thermosetting polymer, ceramer, or a reactive precursor of said polymer or ceramer; and (b) allowing the resulting combination to cure.

45. A process for preparing a water- and oil-repellent, antistatic composition comprising the step of applying a topical treatment composition to at least a portion of at least one surface of at least one insulating material, said topical treatment composition comprising (a) at least one polymeric salt consisting of at least one cation having at least one polyoxyalkylene moiety bonded to a cationic nitrogen center and at least one anion, said anion being a weakly coordinating fluoroorganic anion; and (b) at least one fluorochemical repellent.

46. The process of claim 45, wherein a first topical treatment composition comprises said polymeric salt, a second topical treatment composition comprises said fluorochemical repellent, and said first and second topical treatment compositions are sequentially applied to said portion of said surface.

47. A process for preparing a water- and oil-repellent, antistatic composition comprising the steps of (a) dissolving (i) at least one polymeric salt consisting of at least one cation having at least one polyoxyalkylene moiety bonded to a cationic nitrogen center and an anion, and at least one anion, said anion being a weakly coordinating fluoroorganic anion, (ii) at least one fluorochemical repellent, and (iii) at least one insulating material in at least one solvent; (b) casting or coating the resulting solution on at least one substrate; and (c) allowing evaporation of said solvent.

48. A process for preparing a water- and oil-repellent, antistatic composition comprising the steps of (a) combining (i) at least one polymeric salt consisting of at least

cation having at least one polyoxyalkylene moiety bonded to a cationic nitrogen center and at least one anion, said anion being a weakly coordinating anion, the conjugate acid of said anion having an acidity greater than or equal to that of a hydrocarbon sulfonic acid, (ii) at least one fluorochemical repellent, and (iii) at least one monomer; and (b) allowing

5 polymerization of the monomer to occur.

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